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Forest Genetics for Productivity – the next generation

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Editorial

Forest genetics has now reached a stage where advances in genomics and remote sensing have become accessible to practitioners. The cost of genomics is now low enough that this technology can be operationally implemented into breeding programmes. This is already happening in the genus *Populus*, and genomic tools are already available in many species of *Eucalyptus*. Animal and crop breeders have shown the way—large-scale application of genomics is here and happening. In addition, remote sensing (particularly LiDAR or photogrammetry through unmanned aerial vehicles) has the potential to replace on-ground assessments to provide data that are more accurate and less subjective than data of any scale available previously. The opportunities are enormous.

A range of topics relevant to modern tree breeding such as the practical requirements for breeding trees, quantitative and molecular genetics and the importance of phenotyping were the focus of an international conference entitled "Forest Genetics for Productivity – the next generation" that was held in Rotorua, New Zealand, from March 14 to 18, 2016.

In total, 109 delegates attended the conference from 17 countries, including New Zealand, Australia, Canada, Chile, the Czech Republic, Estonia, France, Japan, Poland, South Korea, Sweden, USA, Brazil and Germany. These included scientists and foresters from both the Australian and New Zealand forestry sectors as part of the aligned Australasian Forestry Breeding Conference.

The meeting was sponsored by several IUFRO groups:

Unit 2.02.20—breeding and genetic resources of southern pines
Unit 2.02.02—breeding theory and progeny testing
Unit 2.02.05—breeding and genetic resources of Pacific Northwest conifers
Unit 2.04.06—molecular biology of forest trees

The conference was opened by Director General Martyn Dunne from the New Zealand Ministry for Primary Industries. He highlighted the need to collaborate internationally to ensure New Zealand has access to the best science available to remain competitive, encourage new technology and develop innovative products. Growing trees that produce high-quality logs, which can be transformed into higher-value products, will enable the sector to increase export revenue and adapt to changing market conditions.

Experts in their fields were invited to show the challenges and issues that are relevant for the future. Presentations from the conference are available on the website: www.fgpc2016.nz. Key issues raised included the use of new technologies and dealing with climate change for long-lived trees. Lessons learned from breeding various types of animals were also reviewed in order to highlighting learnings and directions for tree breeding. In addition, delegates were presented with the outcomes that New Zealand forestry growers would like to see addressed by science and how these would impact delivery. The key question now is how fast can the forestry industry adapt how it operates in order to deliver the best genetic solution, whether it be for conservation or for production purposes?

The papers in this themed series provide a permanent record of some of the topics discussed at the conference. Special thanks go to the editorial and production teams at the *New Zealand Journal of Forestry Science* for preparing this themed series and to the numerous anonymous manuscript reviewers for their valuable comments on each of the contributions.

Competing interests
The author declares that she has no competing interests.

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